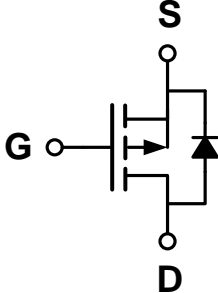
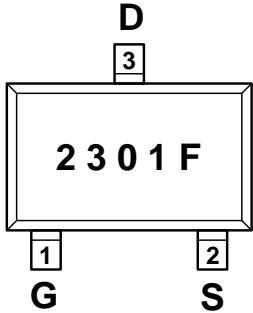


JXP2301FVRG

20V P-Channel Enhancement Mode MOSFET

<p>DESCRIPTION</p> <p>The JXP2301FVRG uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and high density cell Design for ultra low on-resistance. This device is suitable for use as a load switch or in PWM applications.</p> <p>GENERAL FEATURES</p> <ul style="list-style-type: none"> ◇ $V_{DS} = -20V$, $I_D = -2.8A$ $R_{DS(ON)}(Typ.) = 130m\Omega$ @ $V_{GS} = -2.5V$ $R_{DS(ON)}(Typ.) = 95m\Omega$ @ $V_{GS} = -4.5V$ ◇ High power and current handing capability ◇ Lead free product is acquired ◇ Surface mount package <p>APPLICATION</p> <ul style="list-style-type: none"> ◇ PWM applications ◇ Load switch <p>PACKAGE</p> <ul style="list-style-type: none"> ◇ SOT-23 	<p>SCHEMATIC DIAGRAM</p>  <p>PIN ASSIGNMENT</p> <p style="text-align: center;">SOT-23 (TOP VIEW)</p> 
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ORDERING INFORMATION

Part Number	Storage Temperature	Package	Marking	Devices Per Reel
JXP2301FVRG	-55°C to +150°C	SOT-23	2301F	3000

ABSOLUTE MAXIMUM RATINGS

($T_A = 25^\circ C$ unless otherwise noted)

parameter		symbol	limit	unit
Drain-source voltage		V_{DS}	-20	V
Gate-source voltage		V_{GS}	± 12	V
Continuous Drain Current ($T_J = 150^\circ C$)	$T_C = 25^\circ C$	I_D	-2.8	A
	$T_C = 70^\circ C$		-1.5	
	$T_A = 25^\circ C$		-2.2 ^{b,c}	
	$T_A = 70^\circ C$		-1.4 ^{b,c}	
Continuous Source-Drain Diode Current	$T_C = 25^\circ C$	I_S	-1.5	A
	$T_A = 25^\circ C$		-1 ^{b,c}	
Pulsed Drain Current ($t = 300 \mu s$)		I_{DM}	-8	
Maximum power dissipation	$T_C = 25^\circ C$	P_D	1.7	W
	$T_C = 70^\circ C$		1.1	

	$T_A=25^{\circ}\text{C}$		1 ^{b,c}	
	$T_A=70^{\circ}\text{C}$		0.6 ^{b,c}	
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55—150	$^{\circ}\text{C}$

THERMAL CHARACTERISTICS

Parameter		Symbol	Typ	Max	Unit
Maximum junction-to-ambient ^a	≤ 5 s	$R_{\theta JA}$	120	145	$^{\circ}\text{C}/\text{W}$
	Steady-State		140	175	
Maximum junction-to-foot	Steady-State	$R_{\theta JC}$	62	78	

Notes

- a. Surface mounted on 1" x 1" FR4 board
b. Pulse width limited by maximum junction temperature

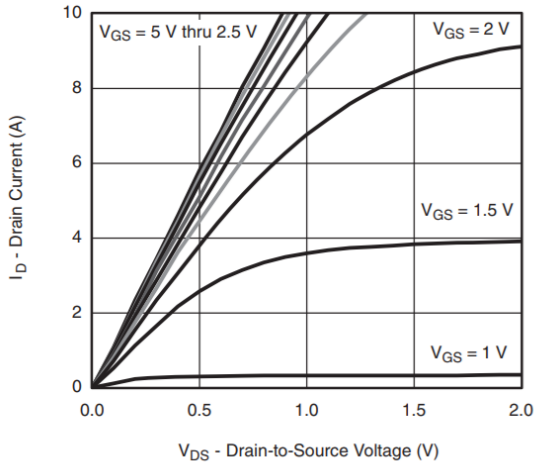
ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF Characteristics						
Drain-source breakdown voltage	BV_{DSS}	$V_{GS}=0\text{V}, I_D=-250\mu\text{A}$	-20	-	-	V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=-20\text{V}, V_{GS}=0\text{V}$	-	-	-1	μA
Gate-body leakage	I_{GSS}	$V_{DS}=0\text{V}, V_{GS}=\pm 12\text{V}$	-	-	±100	nA
ON Characteristics						
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu\text{A}$	-0.5	-0.65	-1.0	V
Drain-source on-state resistance ^a	$R_{DS(ON)}$	$V_{GS}=-4.5\text{V}, I_D=-2\text{A}$	-	95	120	m Ω
		$V_{GS}=-2.5\text{V}, I_D=-1\text{A}$	-	130	150	
Forward transconductance ^a	g_{fs}	$V_{DS}=-5\text{V}, I_D=-1\text{A}$	-	5	-	S
Dynamic Characteristics ^b						
Input capacitance	C_{ISS}	$V_{DS}=-10\text{V}, V_{GS}=0\text{V}$ $f=1.0\text{MHz}$	-	280	-	pF
Output capacitance	C_{OSS}		-	60	-	
Reverse transfer capacitance	C_{RSS}		-	48	-	
Switching Characteristics						
Turn-on delay time	$t_{D(ON)}$	$V_{DD}=-10\text{V}$ $I_D=-2\text{A}$ $V_{GEN}=-4.5\text{V}$ $R_L=9.1\text{ohm}$ $R_{GEN}=1\text{ohm}$	-	13	-	ns
Rise time	t_r		-	21	-	
Turn-off delay time	$t_{D(OFF)}$		-	23	-	
Fall time	t_f		-	9	-	
Total gate charge	Q_g	$V_{DS}=-10\text{V}, I_D=-2\text{A}$ $V_{GS}=-4.5\text{V}$	-	4.8	-	nC
Gate-source charge	Q_{gs}		-	0.8	-	
Gate-drain charge	Q_{gd}		-	1.2	-	
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode forward voltage	V_{SD}	$V_{GS}=0\text{V}, I_S=-1\text{A}$	-	-0.81	-1.2	V

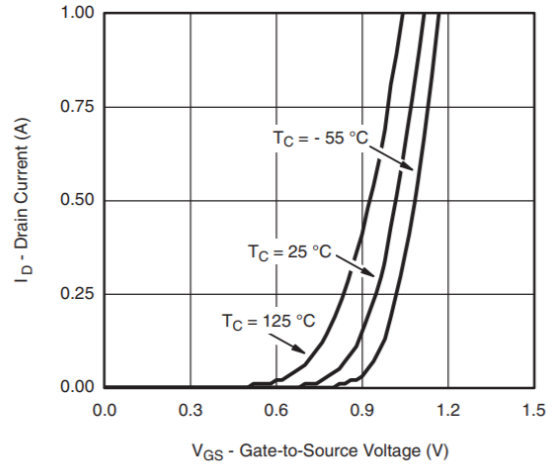
Notes

- a. Pulse test: Pulse width $\leq 300 \mu\text{s}$, duty cycle $\leq 2\%$
- b. Guaranteed by design, not subject to production testing

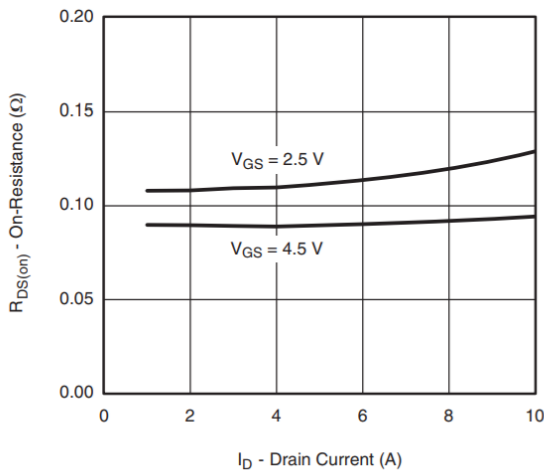
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



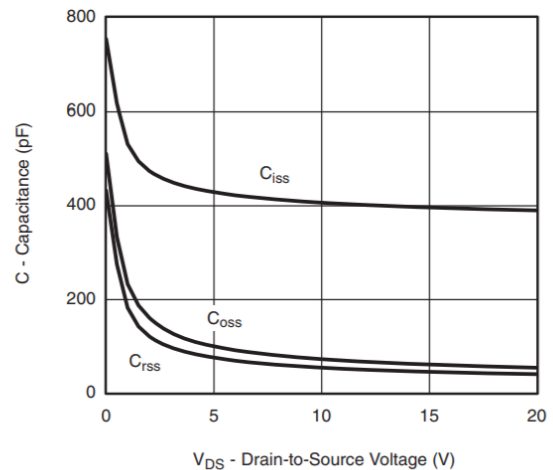
Output Characteristics



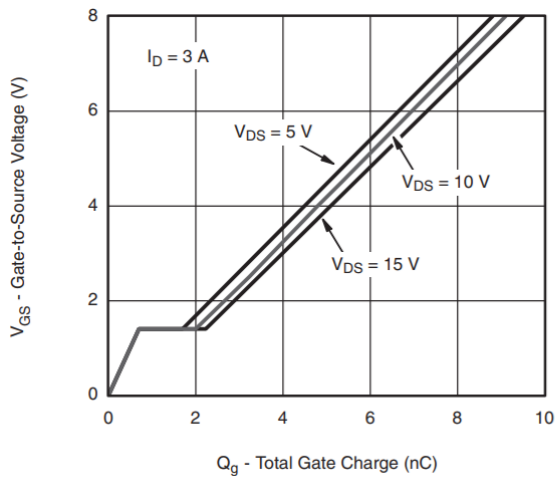
Transfer Characteristics



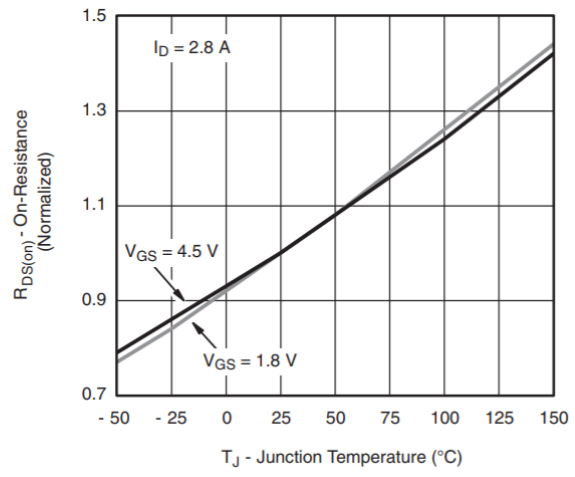
On-Resistance vs. Drain Current and Gate Voltage



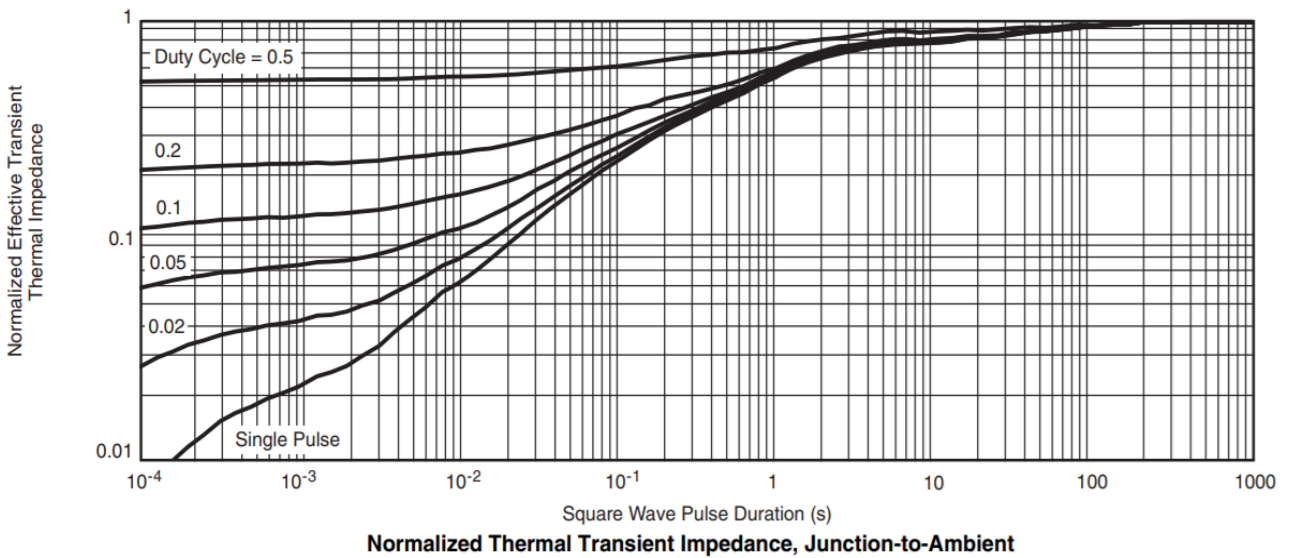
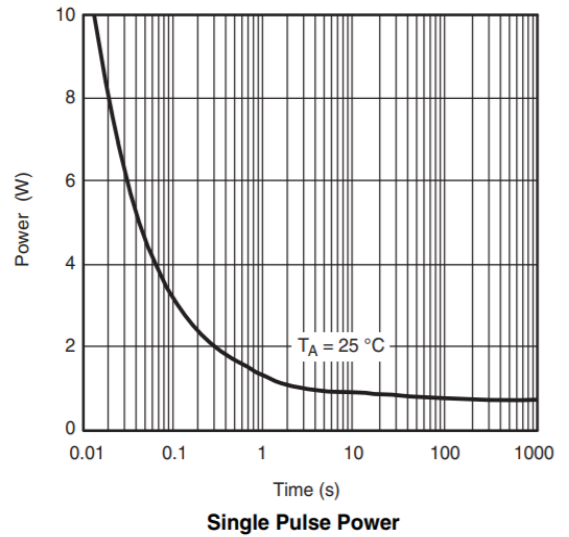
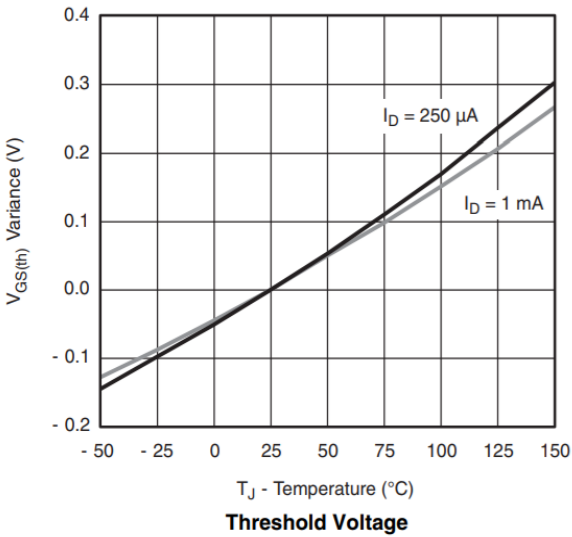
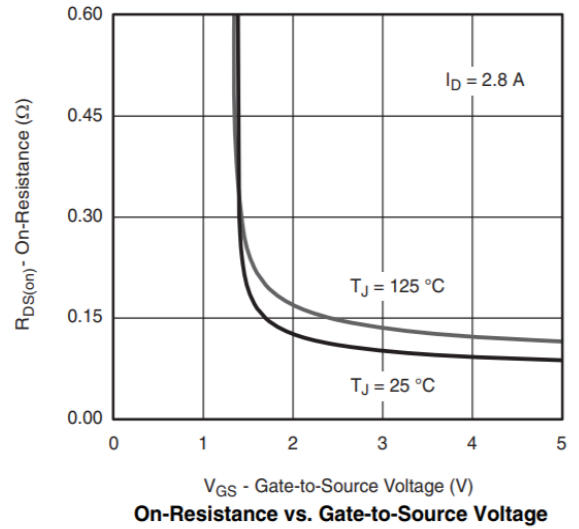
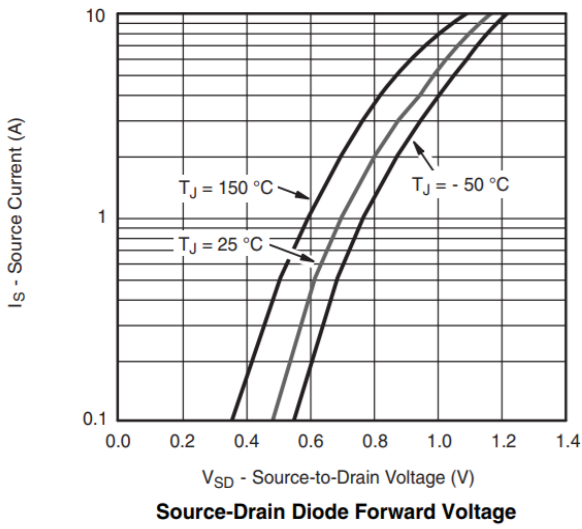
Capacitance



Gate Charge

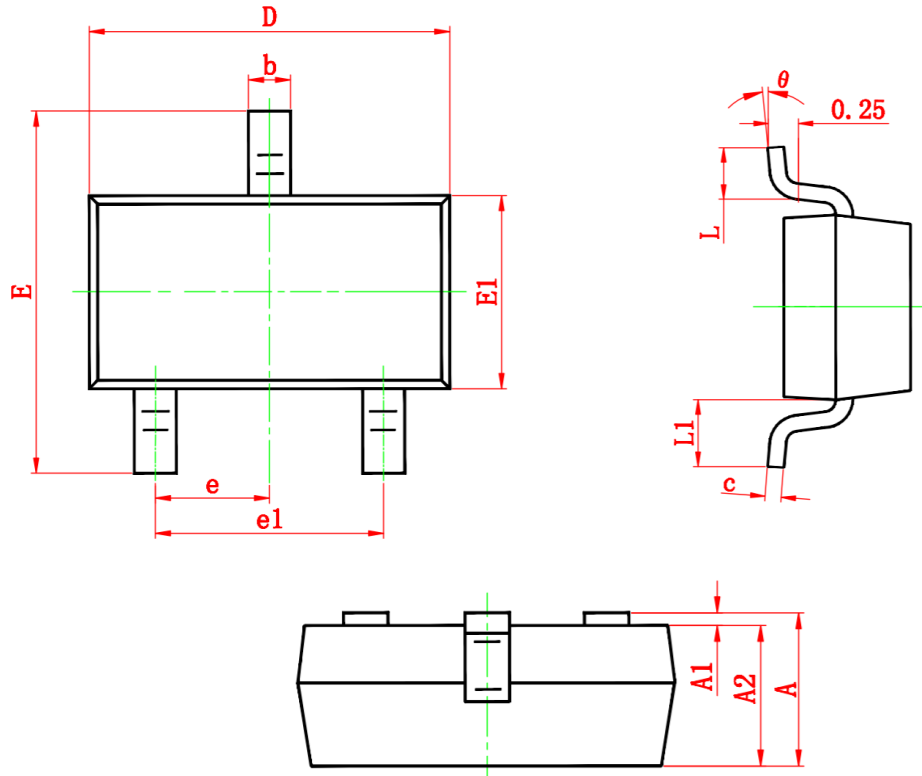


On-Resistance vs. Junction Temperature

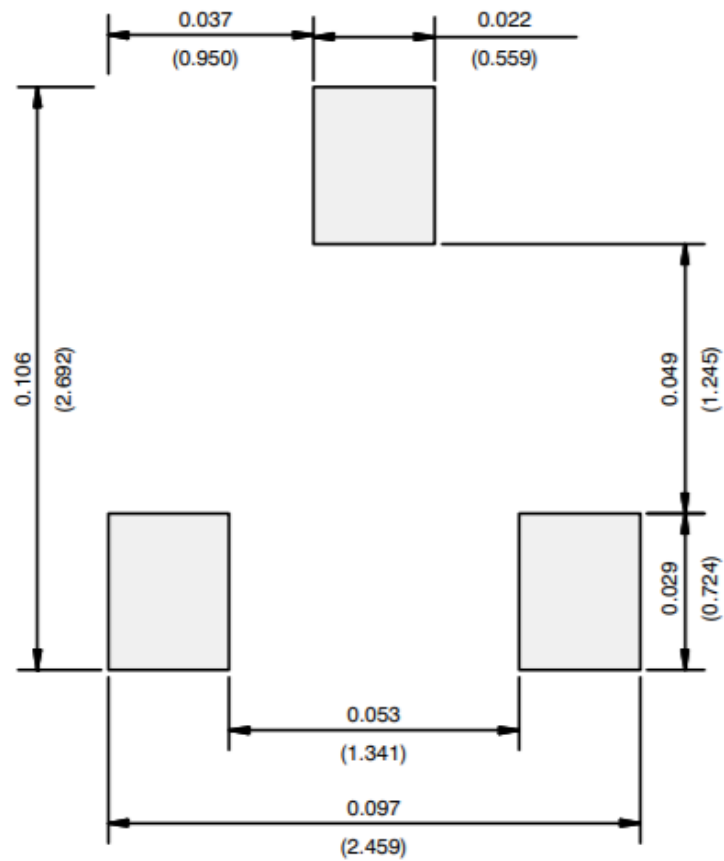


PACKAGE INFORMATION

- SOT-23



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	2.250	2.550	0.089	0.100
E1	1.200	1.400	0.047	0.055
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.300	0.500	0.012	0.020
L1	0.550 REF.		0.022 REF.	
θ	0°	8°	0°	8°

RECOMMENDED MINIMUM PADS FOR SOT-23

Recommended Minimum Pads
Dimensions in Inches/(mm)